

LEMBAR KEGIATAN PESERTA DIDIK (LKPD) – MATEMATIKA KELAS X
EKSPONEN

Materi : Sifat-sifat Eksponen / Perpangkatan

Nama : _____

Kelas/No : _____

Petunjuk : Klik pada tempat isian untuk menjawab dan tuliskan jawabanmu.

1) Dengan sifat 1-3, sederhanakan :

a) $3^4 \cdot 3^{-2} = 3^{4+\dots} = 3^{\dots}$

b) $\frac{2^6}{2^{-2}} = 2^{\dots-\dots} = 2^{\dots}$

c) $(2^3)^{-4} = 2^{\dots \times \dots} = 2^{\dots}$

2) Tentukan nilai p sedemikian sehingga persamaan berikut ini tepat.

a) $(3^4)^2 = 3^{p+1}$

$$\Leftrightarrow 3^{4 \times 2} = 3^{p+1}$$

$$\Leftrightarrow 3^{\dots} = 3^{p+1}$$

Pangkat depan = pangkat belakang maka

$$\Leftrightarrow \dots = p + 1$$

$$\Leftrightarrow \dots - 1 = p$$

$$\Leftrightarrow p = \dots$$

b) $b^p \cdot b^5 = b^9$

$$\Leftrightarrow b^{\dots+\dots} = b^9$$

Pangkat depan = pangkat belakang maka

$$\Leftrightarrow p + \dots = 9$$

$$\Leftrightarrow p = 9 - \dots$$

$$\Leftrightarrow p = \dots$$

c) $(3\pi)^p = 27\pi^3$

$$\Leftrightarrow (3\pi)^p = 3^{\dots} \pi^3$$

$$\Leftrightarrow (3\pi)^p = (\dots \pi)^3$$

$$\Leftrightarrow p = \dots$$

3) Sederhanakan.

$$a) \frac{2^5 \cdot 2^3}{2^2} = \frac{2^{5+3}}{2^2} = \frac{2^8}{2^2} = 2^{8-2} = 2^6$$

$$b) \frac{2^7}{2^2 \cdot 2^3} = \frac{2^7}{2^{2+3}} = \frac{2^7}{2^5} = 2^{7-5} = 2^2$$

$$\begin{aligned} c) (2^3 \cdot 3^{-1})^{-2} &= (2^3 \cdot 3^{-1})^{-2} \\ &= (2^3 \cdot 3^{-1})^{-2} \\ &= 2^{3 \cdot -2} \cdot 3^{(-1) \cdot -2} \\ &= 2^{-6} \cdot 3^2 = \frac{3^2}{2^6} \end{aligned}$$

4) Hitunglah nilainya.

$$a) 81^{\frac{3}{4}} = (3^4)^{\frac{3}{4}} = 3^{4 \cdot \frac{3}{4}} = 3^3 = 27$$

$$b) 32^{\frac{2}{5}} = (2^5)^{\frac{2}{5}} = 2^{5 \cdot \frac{2}{5}} = 2^2 = 4$$

$$c) 125^{\frac{2}{3}} \cdot 27^{\frac{1}{3}} = (5^3)^{\frac{2}{3}} \cdot (3^3)^{\frac{1}{3}} = 5^{3 \cdot \frac{2}{3}} \cdot 3^{3 \cdot \frac{1}{3}} = 5^2 \cdot 3^1 = 25 \cdot 3 = 75$$